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Universal Service)

CC Docket No. 96-45

To: Joint Board

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**COMMENTS OF THE U.S. NATIONAL COMMISSION ON LIBRARIES
AND INFORMATION SCIENCE ON SPECIFIC QUESTIONS IN
UNIVERSAL SERVICE NOTICE OF PROPOSED RULEMAKING**

The Honorable Jeanne Hurley Simon,
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Dated: 2 August 1996

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The U.S. National Commission on Libraries and Information Science (NCLIS)¹ is pleased to provide the Federal Communications Commission (FCC) these comments on specific universal service questions related to the matter of the Federal-State Joint Board on Universal Service (CC Docket No. 96-45). These responses supplement the National Commission's comments and reply comments filed with the Federal-State Joint Board on 8 April 1996 and 7 May 1996, respectively.

These comments relate to the Joint Federal-State Board's consideration of universal service support mechanisms to assure public library access to advanced information and telecommunications services at discounted rates. They result from NCLIS's 1996 survey of public libraries and the Internet presented in *The 1996 National Survey of Public Libraries and the Internet: Progress and Issues*, July 1996, a pre-publication copy of which is attached to these comments as an appendix. The findings from the NCLIS 1996 survey of public libraries are relevant to the Federal-State Joint Board's development of universal service regulations for libraries. NCLIS Commissioners would welcome the opportunity to meet with the members of the Joint Federal-State Board to provide additional information related to the provision of special and core services for universal service support for eligible libraries.

The following general points summarize the National Commission's survey findings and highlight the need for universal service mechanisms that will allow public libraries to provide public access to advanced information and telecommunication services in the most dependable and straightforward fashion. The NCLIS survey findings emphasize the need to address serious discrepancies and disparities relating to levels of public library Internet service, types of Internet connectivity, the costs for Internet, and in the provision of Internet access services to the public.

- Between 1994 and 1996 public library Internet connectivity increased 113% overall from 20.9% to 44.6%;
- By 1997, public library Internet connectivity may exceed 90%;
- Public library use of the Internet varies with the size of population served;
- Public libraries in communities under 5,000 are significantly (59%) less likely to use the Internet than those serving populations from 100,000 to 1 million +;
- Public libraries in different regions of the U.S. have different levels of Internet-connectivity;
- Nearly 40% of public libraries without Internet have no plans to connect in the next 12 months;
- The NCLIS surveys of public library Internet involvement reveal discrepancies related to
 - the extent of connectivity
 - the type of connectivity
 - connectivity costs, and
 - the provision of Internet public access services.

¹ NCLIS was established by P.L. 91-345 (19 July 1970) to conduct studies, surveys, and analyses, and to appraise the adequacies and deficiencies of current library and information services. The Commission advises the President and the Congress on the implementation of national policies related to libraries and information services.

**NCLIS Further Selected Comments on Specific Issues Relating to Universal Service for
Libraries
Schools, Libraries, Health Care Providers**

6) Should the services or functionalities eligible for discounts be specifically limited and identified, or should the discount apply to all available services?

Based on NCLIS's 1994 and 1996 survey research of public libraries and the Internet, the Commission recommends that discounts be applied to those advanced high-speed, switched, broadband telecommunications capabilities enabling users to originate and receive high-quality voice, data, graphics and video telecommunications using any technology. NCLIS found significant increases in public library Internet connectivity between 1994 and 1996, but also found that public libraries are: a.) committing significant resources to support information technology infrastructure development, b.) increasing the number and band-width of their connections to the Internet, and c.) providing additional public access terminals for their communities to access Internet-based services directly. Many public libraries are planning to embrace the global networked environment and are planning implementation strategies to provide networked information services to their patrons, but will be unable to realize these plans without effective universal service discount methodologies.

7. Does Section 254(h) contemplate that inside wiring or other internal connections to classrooms may be eligible for universal service support of telecommunications services provided to schools and libraries? If so, what is the estimated cost of the inside wiring and other internal connections?

Based on the results of research into the costs of public libraries and the Internet², the Commission has developed cost categories, elements, and models of public library Internet services that are useful in understanding the inside wiring and internal connections required for public libraries (both central and branch libraries) to provide access to advanced telecommunications services as addressed by Section 254(h). Estimated costs for inside wiring and other internal connections, from the Commission's research, constitutes between 20% and 35% of total initial costs for public libraries estimated to be spending between \$12,635 and \$168,220 per library in recurring annual costs for providing public terminals for accessing advanced telecommunications and interactive information services. Many complex factors influence telecommunication-based public library services in different regions of the country serving different population areas, and make it difficult to determine reliable estimates, however, the Commission interprets the universal service provisions included in Section 254(h) to apply to those wiring, hardware, software, telecommunication cabling, and facility renovation costs necessary for the library to offer services based on advanced telecommunications technologies.

² U.S. National Commission on Libraries and Information Science. Internet Costs and Cost Models for Public Libraries: Final Report. June, 1995.

8.) To what extent should the provisions of Sections 706 and 708 be considered by the Joint Board and be relied upon to provide advanced services to schools, libraries and health care providers?

It is critical that the telecommunications regulations relating to the provision of access to advanced telecommunications capability to all Americans at the national and State levels help assure that public libraries to be able to present opportunities for the public to benefit from infrastructure investment. Public libraries need to develop a regular program of data collection, performance measures, and related statistics of networking activities and services, and it is necessary to develop a timely and accurate process for measuring the degree to which universal service goals have been achieved. This measurement process must also be able to identify what barriers remain to advanced telecommunications capability deployment to all Americans.

9.) How can universal service support for schools, libraries, and health care providers be structured to promote competition?

The Commission recognizes the need to formulate regulations which foster the development of a competitive market for telecommunications services, but NCLIS also recognizes the role of public libraries to function as training/education centers where the public can learn to use advanced telecommunication services effectively. Public libraries offer public access to competitive services and present opportunities for potential customers to identify specific competitive service features that best meet individual needs.

10.) Should the resale prohibition in Section 254(h)(3) be construed to prohibit only the resale of services to the public for profit, and should it be construed so as to permit end user cost based fees for services? Would construction in this manner facilitate community networks and/or aggregation of purchasing power?

In general, the National Commission's 1996 survey research shows that only 3.6% of public libraries offering Internet-services to the public charge some type of fee for graphical Web services, 3.3% have some type of fee for their e-mail account services, 3.1% have some type of fee for their text-based Web services, 1.7% have some type of fee for their gopher-based services, and 1.2% have some type of fee for their newsgroup services. Thus, few public libraries in 1996 offer fee-based services to users and, as public libraries expand public access service offerings to advanced telecommunications capabilities, it is questionable whether the principle of offering free services from publically-supported community-funded libraries will be modified. It appears that the prohibition against sale, resale, or transfer in consideration for money is construed to prohibit resale at a profit and to prohibit end user cost based fees for services.

12.) Should discounts be directed to the states in the form of block grants?

In order to minimize the barriers to the provision of telecommunications services to schools and libraries, functions to be supported through universal service mechanisms must allow libraries to receive advanced services in the most dependable and straightforward fashion. Rather than pay full service rates with subsequent rebate through a separately administered fund for universal service, it may be more efficient to employ block grants based on the population of the library's local service

area and the level of per-capita support provided to the public library. Whatever block grant mechanism or other discount methodology is selected, it should provide for a flexible range of services, including the capacity and speed to accommodate multiple simultaneous users.

13.) Should discounts for schools, libraries, and health care providers take the form of direct billing credits for telecommunications services provided to eligible institutions?

Direct billing credits for telecommunications services provided to libraries for staff and public use would appear to offer certain administrative efficiencies, but the advantages of direct billing credits compared with block grants and other universal service mechanisms need to be measured against current discrepancies and disparities in public library use of advanced telecommunication services. For example, NCLIS 1996 survey responses indicate that by 1997, for communities of 99,999 or less, a significant percentage of the libraries will have no Internet connections and even fewer will provide public access to the Internet. Indeed, for public libraries serving populations of less than 5,000 almost half will not have any type of Internet connectivity by March 1997. In terms of regions, 47% of libraries in the South will not have connections to the Internet whereas only 31% in the West will not have connections.

14.) If the discounts are disbursed as block grants to states or as direct billing credits for schools, libraries, and health care providers, what, if any, measures should be implemented to assure that the funds allocated for discounts are used for their intended purposes?

In comparing the percent of public libraries that provide public access to the Internet from 1994 to 1996, and projected to 1997, the growth rate is much smaller than the rate that the libraries are obtaining Internet access for the library only. Thus, despite significant gains in overall connectivity, only 50% of the public libraries are projected to provide public access to the Internet by March 1997. The vast majority of the public libraries *not* providing public access to the Internet serve populations of 99,999 or less.

15.) What is the least administratively burdensome requirement that could be used to ensure that requests for supported telecommunications services are bona fide requests within the intent of section 254(h)?

Reference in Section 254(h)(4) to entity eligibility for participation in Library Services and Construction Act programs is sufficient to ensure bona fide requests for supported telecommunications services. However, given the disparities between different public libraries in different size communities currently offering Internet services, proactive contacts to those public libraries eligible that are eligible to receive supported telecommunications services may be advisable.

16.) What should be the base service prices to which discounts for schools and libraries are applied: (a) total service long-run incremental cost; (b) short-run incremental costs; (c) best commercially-available rate; (d) tariffed rate; (e) rate established through a competitively-bid contract in which schools and libraries participate; (f) lowest of some group of the above; or (g) some other benchmark? How could the best commercially-available rate be ascertained, in light of the fact that many such rates may be established pursuant to confidential contractual arrangements?

The 1996 NCLIS survey that shows that 78.3% of the population of the library legal service area being served by a public library with some type of Internet connectivity in 1996 and projected to be 91% of the American population in 1997 may sound impressive but may also be misleading. In fact, a library that has one Internet dial-up connection and serves a legal population of about 200,000 provides relatively poor Internet-based connectivity, and possibly offers no Internet-based services to the public; whereas there can be another public library also serving a population of about 200,000 with 28 public access workstations, with T1 connectivity, managing its own Web site, and offering a range of networked services. Discount structures must allow both types of public libraries to offer their communities with advanced telecommunications connectivity appropriate to the needs of the population.

17.) How should discounts be applied, if at all, for schools and libraries and rural health care providers that are currently receiving special rates?

The National Commission's research which resulted in publication of Internet Costs and Cost Models for Public Libraries in 1995 identified institutions which received special rates in support of offering Internet-based services to the public. NCLIS would be pleased to offer additional information to the Federal-State Joint Board regarding these situations at a later time.

18.) What states have established discount programs for telecommunications services provided to schools, libraries, and health care providers? Describe the programs, including the measurable outcomes and the associated costs.

Throughout the National Commission's research from 1994 to the present, a number of state-based programs for support of public library offering of telecommunications-based services (such as the Internet) have been identified. These include programs in Rhode Island, Iowa, Maryland, Colorado, West Virginia, and California. NCLIS would be pleased to share more information regarding these programs with the Joint Federal-State Board.

19) Should an additional discount be given to schools and libraries located in rural, insular, high-cost and economically disadvantaged areas? What percentage of telecommunications services (e.g., Internet services) used by schools and libraries in such areas are or require toll calls?

Based on the results of the 1994 and 1996 NCLIS survey research on public libraries and the Internet, the Commission recommends an additional discount so that disparities across the country can be corrected. For example, NCLIS' survey research found significant disparities by size of population and by region. The following paragraphs describe in more detail these differences discovered by the research. Disparities also remain regarding the *type* of connectivity that the various public libraries have to the Internet. Roughly half of the libraries serving populations of 500,000 or more have T1 connectivity to the Internet, whereas very few of the libraries serving populations of 49,999 or less have T1 connectivity. The South and West have almost twice as many libraries connected with T1 compared to libraries in the Midwest and the Northeast.

21) Should the Commission use a sliding scale approach (i.e., along a continuum of need) or a step approach (e.g., the Lifeline assistance program or the national school lunch program) to allocate any additional consideration given to schools and libraries located in rural, insular, high-cost and economically disadvantaged areas?

Currently there are disparities in information technology expenditures, connectivity rates, and the type of connectivity available to public libraries, but, in addition, serious disparities appear in terms of the types of Internet-based services that the libraries can provide. Just as one example, approximately 50% of public libraries serving populations of 500,000 or more have Web servers whereas only 17% of the libraries serving populations of 50,000 - 99,999 have Web servers - and only 35% of the libraries serving populations of 9,999 or less have such Web-based services. These disparities can best be addressed by providing additional consideration to libraries located in rural, insular, high-cost and economically disadvantaged areas.

22.) Should separate funding mechanisms be established for schools and libraries and for rural health care providers?

The Commission's investigations and research into public library involvement with the Internet, together with discussions involving McKinsey & Company consultants who were involved with *Connecting K-12 Schools to the Information Superhighway*, suggest establishment of separate funding mechanisms which would address the differences between school and public library environments -- these differences include the technological, administrative, funding, organizational, and physical. At the same time, however, it is important to structure incentives for cooperation and collaboration among multiple community partners (such as schools, libraries, and other community organizations) that would leverage the advantages of advanced telecommunication capabilities for the benefit of the entire community

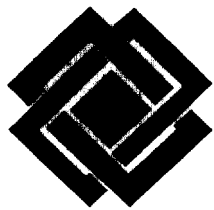
23. Are the cost estimates contained in the McKinsey Report and the NII KickStart Initiative an accurate funding estimate for the discount provisions for schools and libraries, assuming that tariffed rates are used as the base price?

There are no cost estimates for public libraries in the McKinsey report, *Connecting K-12 Schools to the Information Superhighway*, or in the *KickStart Initiative*. The National Commission sponsored research in 1995 which resulted in *Internet Costs and Cost Models for Public Libraries*. However, this study was to develop models for local application, not national. As the foreword stated, "The models developed in this study present possible alternatives for consideration at the institutional level. Because local circumstances, choices and alternatives for Internet access and services vary significantly, the cost elements, categories and models presented in this report provide illustrative examples, not implementation instructions."

24.) Are there other cost estimates available that can serve as the basis for establishing a funding estimate for the discount provisions applicable to schools and libraries and to rural health care providers?

The National Commission sponsored research in 1995 which resulted in *Internet Costs and Cost Models for Public Libraries*. From this research into cost elements, cost categories, and cost

models, it would be possible to develop cost estimates to serve as the basis for establishing a funding estimate for discount provisions applicable to public libraries. However, care must be taken to incorporate the variety of different and complex factors which affect the costs and investments of one community compared with those of another public library, since local and state conditions have a significant influence on the type, extent, and cost level



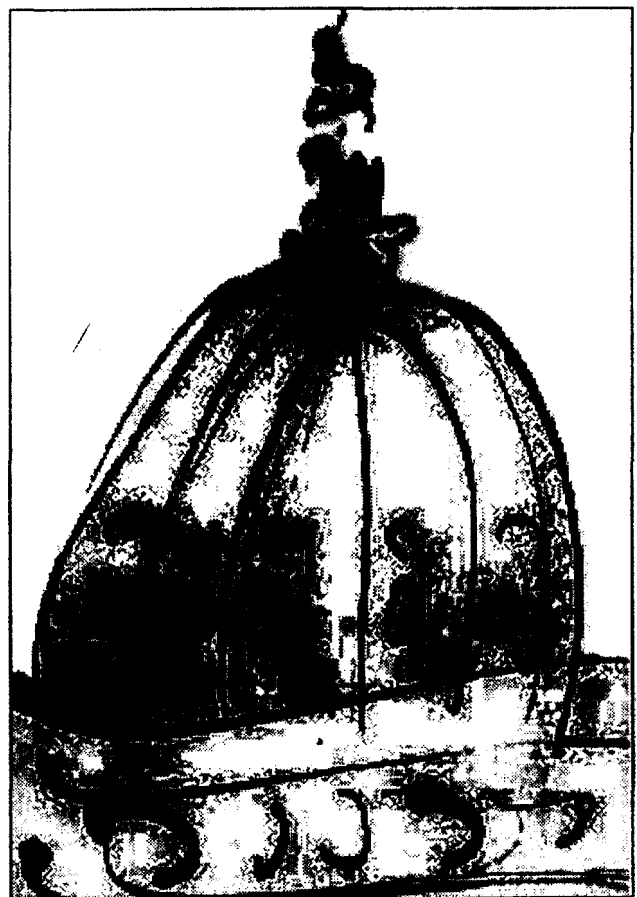
National Commission on
Libraries and Information Science

The 1996 National Survey of Public Libraries and the Internet:

Progress and Issues

Final Report

July 1996



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**The views, opinions, and recommendations expressed in this report
are those of the authors and do not necessarily reflect official position or policy of the
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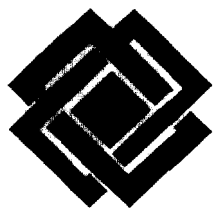
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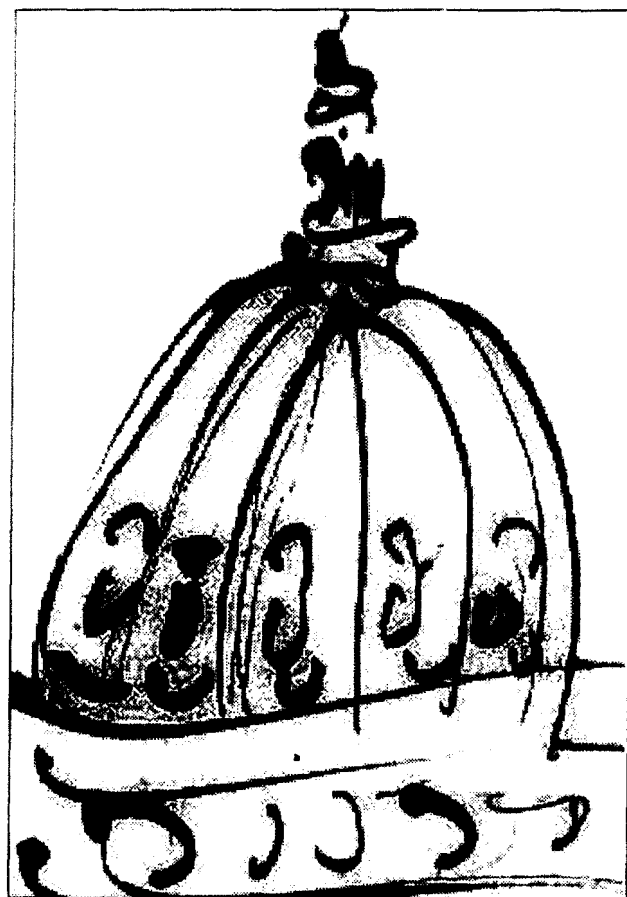
National Commission on
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The 1996 National Survey of Public Libraries and the Internet:

Progress and Issues

Final Report

July 1996



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United States
National Commission on
Libraries and Information Science

July 1996

The Honorable William J. Clinton
President of the United States
The White House
1600 Pennsylvania Avenue
Washington, D.C. 20500

The Honorable Al Gore, Jr.
Vice President of the United States
The Old Executive Office Building
Washington, D.C. 20501

Dear Mr. President and Mr. Vice President:

The Members of the U.S. National Commission on Libraries and Information Science (NCLIS) are pleased to present this report, The 1996 National Survey of Public Libraries and the Internet: Progress and Issues. This research responds to the Commission's statutory mandate to promote activities that extend and improve the Nation's library and information handling capability as essential links in the emerging global network infrastructure.

In 1994 NCLIS issued Public Libraries and the Internet: Study Results, Policy Issues, and Recommendations which reported that 20.9% of U.S. public libraries were connected to the Internet. Based on this research, the Commission sponsored a 1995 study of Internet costs for public libraries that were reported in Internet Costs and Cost Models for Public Libraries. These studies are based on the conviction that public libraries will be an essential component of the national information infrastructure of the future. The 9,050 public libraries in the U.S. provide the basis for extending the benefits of advanced information services to all Americans.

The Commission's 1996 survey of public libraries and the Internet was conducted in order to:

- determine the percentage of public libraries connected to the Internet in 1996;
- identify changes in public library connectivity between 1994 and 1996;
- project public library Internet involvement into the future;
- determine the percentage of public libraries that offer public access to Internet services;
- identify the type of Internet services public libraries are providing to the public.

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Our research in this area prompts the Commission's concern about the capacity of public libraries to serve as vital community links to networks. Although public library involvement with the Internet is increasing rapidly, there are serious discrepancies related to the level of public library Internet service, type of Internet connectivity, the costs for Internet, and the provision of Internet access services to the public.

The Commission's latest study of public libraries and the Internet reveals the following:

- Between 1994 and 1996 public library Internet connectivity increased 113% overall from 20.9% to 44.6%);
- By 1997, public library Internet connectivity may exceed 90%;
- Public library use of Internet varies with the size of population served;
- Public libraries in communities under 5,000 are significantly (59%) less likely to use the Internet than those serving populations from 100,000 to 1 million +;
- Public libraries in different regions of the U.S. have different levels of Internet-connectivity;
- Nearly 40% of public libraries without Internet have no plans to connect in the next 12 months;
- The NCLIS surveys of public library Internet involvement reveal discrepancies related to
 - the extent of connectivity
 - the type of connectivity
 - connectivity costs, and
 - the provision of Internet public access services.

The Commission's research prompts concern that public libraries serving smaller communities of 25,000 or less may not be able to provide public Internet access. Without Internet access, public libraries serving residents of smaller communities may lack any means of access. We must therefore work together to identify policies and programs so that public libraries in every community will fulfill a central role in assuring universal access to advanced information and communications services. To do less is to widen the gap between the information 'haves' and the 'have nots'.

The Members of the National Commission look forward to working with you to extend your leadership in connecting "...every classroom, every clinic, every library, every hospital in America into a national information superhighway by the year 2000."

Sincerely,

Jeanne Hurley Simon

Jeanne Hurley Simon
NCLIS Chairperson

Acknowledgments

The completion of this 1996 national survey of public libraries and the Internet is due, in large part, to the many public librarians who completed and returned the survey questionnaire. The high response rate to the survey indicates the continued interest on the part of the public library community in the use and development of the Internet. To all those who took the time to complete the questionnaires and provide the data that we analyzed and reported here, we thank you very much.

The authors would also like to express their thanks to members of the Advisory Board. These individuals provided guidance and suggestions, and participated in pre-testing the survey instrument. Advisory Board members include: Bob Bocher, Wisconsin Department of Public Libraries; Craig Buthod, Seattle Public Library; Mary Lou Caskey, Mid-York Library System, Utica, NY; Carol DiPrete, Roger Williams University and Commissioner, National Commission on Libraries and Information Science (NCLIS); Keith Curry Lance, Colorado Department of Education; Mary Jo Lynch, American Library Association; Donna Mancini, the Public Library of Nashville and Davidson County; Amy Owen, Utah State Library Division; Barbara G. Smith, Maryland Division of Library Development and Services; and Eleanor Jo Rodger, Urban Libraries Council.

The support and encouragement of NCLIS to conduct this survey and to compare its findings to the one conducted in 1994 was most appreciated. Executive Director Peter R. Young helped to organize the study, provided suggestions and ideas for data collection and analysis, and worked with other organizations to involve them in the study. His direct involvement and assistance contributed significantly to the completion of the project. The support of the commissioners and NCLIS staff is also greatly appreciated.

Others to whom we are deeply indebted are the Federal-State Cooperative System (FSCS) Data Coordinators in each of the various states and staff at the state library agencies. These individuals worked very hard to encourage libraries to respond to the questionnaire. They contacted library directors, reminded them to complete the survey, and often visited them directly to encourage them to reply. Were it not for their assistance, the study would not have had the high response rate it enjoyed. Thank you very much for your help.

Finally, the authors would like to acknowledge the assistance of Beth Mahoney for her excellent work in the final production of this report. We also greatly appreciate the copyediting done by Martine Beachboard.

John Carlo Bertot
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July 1996

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The 1996 National Survey of Public Libraries and the Internet: Progress and Issues

Final Report

INTRODUCTION

The 1996 *National Survey of Public Libraries and the Internet* builds and expands upon the original 1994 National Commission on Libraries and Information Science (NCLIS) national study. During the two years since that first national study, a series of events occurred that continue to influence the development of the national and global information infrastructures in general and public library involvement in that infrastructure development in particular (U.S. Advisory Council on the National Information Infrastructure, 1996). These events include, but are not limited to:

- Passage of the *Telecommunications Act of 1996* (P.L. 104-104);
- Development of Universal Service guidelines by the Federal Communications Commission (FCC), in conjunction with the Joint Board, as mandated by the *Telecommunications Act of 1996*;
- Introduction of the Library Services and Technology Act (LSTA) (as part of H.R. 1617) as a replacement for the Library Services and Construction Act (LSCA) to substantially augment public library electronic network infrastructure development;
- Development of intellectual property legislation, based on the work of the Information Infrastructure Task Force Working Group on Intellectual Property Rights, suitable to the electronic publishing environment (Information Infrastructure Task Force, 1995); and,
- Transition by the Government Printing Office (GPO) to enhance its electronic government document services due to an increasing amount of agency electronic publications (Government Printing Office, 1996).

These policy initiatives create an extremely fluid and volatile policy context. On the one hand, the federal government is in the process of reducing its involvement in locally-based National Information Infrastructure (NII) initiatives through the passage of the *Telecommunications Act of 1996* and possible action on LSTA. On the other hand, the federal government is creating a regulatory framework that can dramatically affect the ability of such community-based institutions as the public library to participate in the NII through the FCC's Federal-State Joint Board development of Universal Service regulations. These policy initiatives may substantially affect the ability of public libraries to actively engage in the evolving NII.

The purpose of this section is for the authors to present a selective review of key policy initiatives, as defined above. Readers who desire a more extensive review of public library literature in relation to electronic networked services can refer to the following:

- *The Clinton administration and the National Information Infrastructure (NII)* (Bertot and McClure, 1996b);
- *Enhancing the role of public libraries in the National Information Infrastructure* (McClure, Bertot, and Beachboard, 1996);
- *Internet costs and cost models for public libraries* (McClure, Bertot, and Beachboard, 1995a);
- *Policy initiatives and strategies for enhancing the role of public libraries in the national information infrastructure (NII): Final Report* (McClure, Bertot, and Beachboard, 1995b);
- *Public access to the Internet* (Kahin and Keller, 1995); and,
- *Public libraries and the Internet: Study results, policy issues, and recommendations* (McClure, Bertot, and Zweizig, 1994).

The above references will provide readers with a more detailed review of public library involvement in the electronic networked environment and the policy context for that environment.

The Telecommunications Act of 1996 and the Federal-State Joint Board on Universal Service

The *Telecommunications Act of 1996* (P.L. 104-104) signaled the first major revision to the telecommunications regulatory environment since the break-up of AT&T in the early 1980s. Essentially, the Act deregulates the cable, local telephone, and long distance markets to allow regional bell operating companies (RBOCS), long distance carriers (e.g., MCI, Sprint, and AT&T), and cable companies to compete in each other's markets upon meeting certain anti-competitive benchmarks that demonstrate competitor access to cable, local telephone, and long distance carrier markets (Benton Foundation, 1996). The ultimate goal of the Act is to provide for a regulatory environment that fosters telecommunications advancements that lead to a more competitive nation and benefit consumers through competition in the telecommunications marketplace (Bertot and McClure, 1996b).

A critical and exceptionally complex notion of the NII that pervades the current policy debate concerning telecommunications reform is that of universal service/access. In general, universal access is a concept derived from the telephone industry and entails the provision of dial tone — not necessarily services — to all areas. Extending this notion to the NII essentially means that advanced telecommunications technologies — the wires, cables, etc. — should be available throughout the nation on an equitable basis.

Universal service, on the other hand, is based on the notion that market forces and consumer demand may determine the availability of services and content. In an advanced telecommunications environment this model implies that telecommunications carriers will provide telecommunications services in markets where there is a demand and reasonable expectation of profit.

The *Telecommunications Act of 1996* (P.L. 104-104), however, neither clearly defined universal access and service nor distinguished the two. Passage of the Act included provision for the Snowe-Rockefeller-Kerry-Exon amendment that provided for discounted rates for schools and libraries. The Act also mandated the creation of a Federal-State Joint Board, to be chaired by the FCC, to evolve a definition of universal service. Service and access are complementary aspects of connecting to and using the NII that require careful consideration and clarification. "Universal access to the information superhighway implies equal and reasonable opportunity for the individual to be connected to the Internet.... Universal service, however, implies some baseline or minimal level of Internet services to which the federal government assures the public it can access and use" (McClure, 1994, p. 13). These themes will be discussed in more detail in the concluding section of this report.

The current environment in which the FCC is to develop its universal service rulemaking and potentially provide for reduced service fees to such public institutions as public libraries and the K-12 community is such that:

- Approximately six million U.S. households currently do not receive any telephone service and a disproportionate share of these are low-income minority and rural households (National Telecommunications and Information Administration, 1995).

- Fifty percent of public schools have access to the Internet, but only 9% of all instructional rooms in those schools can access the Internet (U.S. Department of Education, 1996);
- As this study shows, 44.6% of public libraries have some type of Internet connection, but such connectivity varies by library population of legal service area and region; and,
- An increasing percentage of public libraries are connecting to the Internet and providing public access to Internet-based services through library connections (Public Library Association, 1995) — a finding substantiated by this study.

The FCC and Federal-State Joint Board, therefore, need to consider the variation in access to basic telephone service by households as well as the community-based public institution infrastructures' adequacy and capabilities.

Library Services and Construction Act/Library Services and Technology Act

Federal funding of libraries, particularly public libraries, is generally small in dollar amounts but significant in the effect it can have on the ability of public libraries to leverage local community resources to match Federal funding (McClure, Bertot, & Zweizig, 1994). The most significant of federal programs that funds public libraries is the Library Services and Construction Act (LSCA) (20 USC 16), a state-based matching fund program. LSCA, the only specific federal source of public library funding, is inadequate in its ability to assist public libraries to participate in the NII due to its non-competitive funding allocation, distribution of funds through state library agencies, and historical provision of construction funding (McClure, Bertot, & Zweizig, 1994). LSCA may need to undergo a transformation that specifically provides for public library-based electronic network initiatives. In part, the American Library Association (ALA)-sponsored LSTA is one such effort being debated by the 104th Congress (H.R. 1617). The intention is that LSTA, if passed, would replace LSCA as the primary federal funding mechanism for public libraries.

The LSTA is an effort by Congress, in part, to (H.R., 1617, Sec. 212(a)(3)(A, E)):

- Establish national library service goals for the 21st century. Such goals are that every person in America will be served by a library that—
- Provides all users access to information through regional, State, national, and international electronic networks; and,
- Provides adequate hours of operation, facilities, staff, collections, and electronic access to information.

LSTA essentially provides for two main grant categories: Information Access through Technology grants and Information Empowerment through Special Services grants. These grant categories enable and promote public libraries to develop and carry out advanced technology infrastructure development.

Included in the LSTA is the requirement that state library agencies perform an annual evaluation of the grant programs to demonstrate the effectiveness of the grants (Sec. 251(b)(1-5). As of spring 1996 a conference committee convened to discuss LSTA differences between the Senate and the House. Congressional inaction on LSTA has added to the unpredictability of the future role of libraries in the NII.

Intellectual Property and the NII

NII policy initiatives widely recognize the risks to and importance of protecting the intellectual property rights of authors and copyright holders in a pervasively networked environment. The administration committed itself to "investigating how to strengthen domestic copyright laws and international intellectual property treaties to prevent piracy and to protect the integrity of intellectual property" (Information Infrastructure Task Force, 1993, p. 5).

To that end, the Information Infrastructure Task Force (IITF) Working Group on Intellectual Property published a preliminary draft report (green paper), *Intellectual Property and the National Information Infrastructure* (Working Group on Intellectual Property, 1994). The report concluded that, while major changes to the statute are not necessary, the Copyright Act does require some modification, including redefinition of "transmission" and "publication" and clarification of "first sale doctrine" (Information Industry Association, 1994). The report also called for a ban on devices or services designed to defeat technical protections that copyright owners developed to safeguard their works and identifies the need to better educate the public to understand intellectual property rights.

The 1994 report endorsed giving copyright owners an exclusive right to control digital transmissions of their works: "the initial Green Paper went too far in extending the exclusive rights of copyright holders and paid only superficial attention to the needs of users of electronic information" (ALAWON, 1995, p. 5). While current copyright law provides copyright owners a form of exclusive reproduction rights, "It has never before now given them an exclusive reading right...." (ALAWON, 1995, p. 5). Such protection, then, would provide copyright owners with control over both the access to and distribution of their material.

After a public comment period, the working group issued its final report, *Intellectual Property and the National Information Infrastructure: The Report of the Working Group on Intellectual Property Rights* (1995). The final report varied little from the initial Green Paper that the Working Group published. The report did, however, make the following key recommendations for copyright law amendment (Working Group on Intellectual Property Rights (1995, Appendix I):

- Redefine "distribution" and "publication" to include transmission;
- Redefine "transmit" to include the transmission of a reproduction; and,
- Exempt libraries from the one-copy limit by permitting libraries to possess three copies of material.

Some analysts from the education and library communities found that the final report was a legalistic document that went too far in protecting publishers' rights.

Intellectual property issues have important implications for the public, the library community, and the publishing community, and will influence the economic arrangements by which libraries will be able to make digital holdings available or, perhaps more significantly, gain access to digital holdings. Existing print-media publishers are becoming increasingly aware of the economic value of their media products. As more of these publishers form partnerships with commercial on-line service providers, public libraries may be forced to reconsider their libraries' economic interests.

The Senate and House introduced bills in the 104th Congress (S. 1284 and H.R. 2441, respectively) that essentially would modify current copyright law based on the recommendations of the working group. It re-

mains unclear if the 104th Congress will act on these bills. The issues, however, will continue to be debated by stakeholders in the information production and consumption industries for some time to come.

An Electronic Federal Depository Library Program (FDLP)

The Government Printing Office (GPO) FDLP, originally created in the late 1800s to ensure an informed citizenry through the distribution of federal government publications to approximately 1400 libraries throughout the nation, is facing the need for fundamental change due to the increased reliance on electronic networks as a means to access and distribute government information.

The continued development of the NII is challenging the traditional means through which the public can access, and the federal government can disseminate, government information through the FDLP. The increasing use of and access to the Internet by the library community in general and the public library community in particular, provide an opportunity for significantly augmenting the FDLP – neither the GPO, the public, nor libraries are limited to accessing and disseminating printed government documents and publications.

The Government Printing Office (GPO), under mandate of law (P.L. 104-53), undertook a study to determine the feasibility, requirements, and potential barriers to creating a more electronically-based FDLP (Government Printing Office, 1996).

In part, the GPO concluded that (Government Printing Office, pp. 3-5):

- There is widespread interest in expanding the content of the FDLP to make it more comprehensive, and a great deal of optimism that the rapid expansion of agency electronic publishing offers cost-effective options to do so.
- With the increasing emphasis on electronic dissemination and decreasing compliance with statutory requirements for agencies to print through GPO, identifying and obtaining information for the FDLP is becoming increasingly difficult.
- To ensure permanent public access to official electronic government information products, all of the institutional program stakeholders (information producing agencies, GPO, depository librar-

ies and National Archives and Records Administration (NARA) must cooperate to establish authenticity, provide persistent identification and description of government information products, and establish appropriate arrangements for its continued accessibility.

- In a distributed environment, where libraries and users often access government electronic information services rather than local collections, tools for identifying and locating information will be critical components of an effective program.
- For the successful implementation of a more electronic FDLP, the Congress, GPO and the library community must have additional information about future agency publishing plans, as well as an expert evaluation of the cost-effectiveness and usefulness of various electronic formats that may be utilized for depository library dissemination or access.
- While there are many benefits inherent in the use of electronic information, including more timely and broader public access, there are no conclusive data at this time to support the assertion that it will result in significant savings to the program as a whole in the next few years.

These findings identify the challenges that GPO will face in creating a more electronically based FDLP program. The challenges are formidable, but necessary, as the means of federal government document publication, dissemination, and access change considerably through the electronic networked environment.

The challenges facing the GPO FDLP, however, may serve to significantly alter and expand the role of public libraries in providing access to federal government information and services. The increased reliance of the federal government on electronic means of access to and dissemination of government information, combined with the increasing involvement with the Internet by public libraries, allows public libraries the potential to enhance access to electronic federal government information services.

The above discussion serves to partially set the policy context for this study. The increasing realization of the NII presents the public library community with numerous challenges concerning the role of public libraries in an electronic networked environment. On the one hand, through the ubiquitous and distrib-

uted nature of the Internet, public libraries have the potential to augment their role as community-based information hubs, acting essentially as network navigators, electronic resource locators, and electronic service providers. On the other hand, the electronic networked environment potentially redefines many aspects of public library policy: document and publication provision, intellectual property concerns, and the telecommunication rates to fund library services. New legislation may specifically support information technology applications for libraries. This study presents both longitudinal and descriptive data to inform policy makers, researchers, and the library community as to the ability of public libraries to successfully meet the challenges of the electronic networked environment.

STUDY RESULTS

This 1996 NCLIS survey gathered data from a national sample of public libraries concerning the current level of public library involvement with the Internet. The data collection occurred between January and March 1996. The purpose of this study was to: (1) provide policymakers, researchers, and library professionals with longitudinal data that measured changes in public library Internet involvement since the first *Public Libraries and the Internet* study (McClure, Bertot, and Zweizig, 1994); (2) Identify costs for public library Internet services; and, (3) Identify issues and inform the policy debate concerning public library roles in the electronic networked environment.

Methodology

This 1996 NCLIS-supported survey closely followed the methodology used in the 1994 survey in order to allow direct comparisons of results from the two surveys. These methods included the process of developing and testing the survey instrument, the drawing of the sample, and the method of drawing estimates from the responses.

Survey Instrument Development

The study team based the initial draft of the survey instrument on the survey form used in 1994, making modifications to reflect current Internet technologies and public library issues. Questions relating to costs of Internet activities were augmented from findings reported in the NCLIS-supported *Internet Costs and Cost Models for Public Libraries* (McClure, Bertot, and Beachboard, 1995). In addition, the Advisory Board for this study provided suggestions for topics to ad-

for this study provided suggestions for topics to address concerning public library involvement with the Internet. Key questions from the 1994 survey were maintained to provide longitudinal data for 1994-1996 public library Internet involvement. In November 1995, the Advisory Board reviewed a draft of the survey instrument. The study team used the comments from the board and NCLIS members and staff to produce a second version of the survey instrument.

Board members each pretested the second draft of the survey instrument with at least five public librarians of the type who would receive the final questionnaire. By December 20, 1995, the study team received over 35 completed pretest instruments along with comments from the Board members. The study team finalized the survey instrument on December 30, 1995, and mailed out the final survey to participating public libraries during the second week of 1996 with a request for response by January 31, 1996 (see Appendix A for a copy of the final survey instrument).

Survey Procedures

This study employed a number of devices to increase the likelihood of prompt response from libraries:

- Sending a postcard via first-class mail to sampled libraries one week before the survey mailing to alert the library director that the survey would be coming. The postcard explained the importance of prompt response and asked the library director to notify the survey office if a survey was not received as of January 15, 1996 (see Appendix B for a copy of the postcard).
- Sending a cover letter on NCLIS stationery and signed by Jeanne Hurley Simon, the chairperson of the Commission, along with the survey. The letter explained the purpose of the survey and stressed the importance of prompt response (see Appendix C for a copy of the letter).
- Providing notices in pertinent library literature to announce the conduct of the survey. An announcement appeared in *LJ Hotline* in an early 1996 issue, giving notice of the intended survey and its purpose, promising a report in the summer of 1996.
- Mailing surveys via first-class mail with a first-class stamp affixed to the return envelope.
- Sending a letter, through NCLIS, to each state library agency in early January 1996 with a list of those public libraries in the state that were included in the sample. This letter asked for any cooperation the state library agency could provide in ensuring a high response rate. State Data Coordinators for the Federal-State Cooperative System (FSCS) were especially helpful in following-up with non-respondents.
- Performing a second mailing of the survey on February 26, 1996 to 250 selected non-responding libraries to increase the response rate within certain regional and population of legal service area strata.
- Faxing each state library agency with non-responding libraries a list that included the names of non-responding libraries in early March 1996. The fax asked for assistance in increasing the response rate. Once again, the FSCS State Data Coordinators proved especially helpful in increasing the survey's response rate.
- Making the survey available on a Web site so that those libraries with graphical access to the World-Wide Web could complete the survey on-line. To review a copy of this survey, point your browser to: <http://research.umbc.edu/~bertot/nclissurvey.html>.
- Returning respondent phone call and email queries concerning survey questions and procedures.

Clearly, the cooperation of the state library agencies was instrumental in the ability of the researchers to obtain a high response rate in a matter of a few months.

Sampling and Data Analysis Procedures

The researchers used the same sample as used in the 1994 public library Internet study in order to measure longitudinal changes in public library involvement. For the 1994 survey, the sample was selected from the FSCS for Public Library Data 1991 Universe File of public libraries maintained by the National Center for Education Statistics (NCES). For the present survey, that sample was checked against the 1993 FSCS Universe File to verify that sampled libraries continued in the universe and to identify changes in library names and addresses. The 1991 FSCS list was composed of 9,050 public libraries, whereas the 1993 list contained a population of 8,929 public libraries.

Based on the above technique, a sample was drawn of 1,495 public libraries. Within the original sample, the researchers in 1995 identified 21 public library changes, of which 15 were due to consolidations and name changes. The remaining six libraries were removed from the sample, leaving a sample size of 1,489. A total of 1,059 surveys were returned, for a response rate of 71.1%.

In drawing the original sample, the public library universe file was stratified by library legal service population¹ class (the legal service population classes were as follows: 1 Million+; 500,000-999,999; 250,000-499,999; 100,000-249,999; 50,000-99,999; 25,000-49,999; 10,000-24,999; 5,000-9,999; Under 5,000;) and, within legal service population class, by four Census Regions (the region groupings were as follows: MIDWEST: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin; NORTHEAST: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont; SOUTH: Alabama, Arkansas, Delaware, Washington, DC, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; WEST: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming). The sample was selected by NCES using a systematic probability proportional to size sampling procedure, the measure of size being the square root of the population of library legal service area. (For more detailed information on the sampling technique used in this study and the drawing of the sample from the NCES Public Library Universe File, contact Steven Kaufman at NCES or Douglas Zweig at the University of Wisconsin-Madison.)

This sampling method assigns each sampled library a weight to reflect its contribution to the estimates for the population stratum to which it belongs. The sample

included all larger libraries (those serving populations of 100,000 or greater), and thus those libraries each received a weight of one. Libraries serving smaller communities received larger weights to the degree that the proportion of their stratum sampled was smaller. Furthermore, after determining the final response rate, adjustments were made to the weights within sampling strata to allow for national estimates that compensated for non-responding libraries.

In order to produce a national estimate, the adjusted weights for the libraries that furnished a value were summed. This provided an estimated count of the libraries nationally with that value. For example, to estimate the number of libraries with an Internet connection (question 7 on the 1996 survey), the adjusted weights of all responding libraries that indicated they had some type of an Internet connection were summed.² Percentages were then calculated in the conventional way.

Any estimates to be derived in the future from this data set will need to follow these same procedures of computing estimates from the weights. Direct calculations from the sample data will not produce correct estimates.

Because the weights were determined within the population and region classes, estimates can be made for the population and region levels and through aggregation for the national level. Because of the sample size and the weighting procedure, estimates cannot be made for individual states or for other classes that might be of interest, such as consortia or library systems. The sample design was constructed in this manner in order to keep the sample size as small as possible and to allow a rapid reporting of data in this dynamic research area. Producing estimates at the state level would require such a large sample size that it would approach the population of libraries and would lose the advantage of a quick response survey.

¹Population of the legal service area is the number of people in the geographic area for which a public library has been established to offer services and from which (or on behalf of which) the library derives income, plus any area served under contract for which the library is the primary service provider (NCES, 1993, p. 109).

²As an example, Bridgeville Public Library of Delaware, based on the FSCS Population of Legal Service Area (less than 5,000) and Census Region categories (South), has been assigned a weighting factor of 9.75 by NCES. In producing national public library estimates for public libraries in the same Population and Region category, each Bridgeville Public Library variable response is multiplied by its assigned weight. Based on Bridgeville's indication of an Internet connection, it is estimated that 9.75 other public libraries in the same stratum have some type of an Internet connection. Totals for the stratum are achieved through summing all the weights for the responses in that stratum. Analysis for each public library and survey question must follow the above procedure to produce accurate national estimates.